

CLAIMS

1. A lubrication method for lubricating a lightweight, four-stroke cycle, throttle-controlled, internal combustion engine used with a power tool to be carried by an operator when in use, the engine having an engine block, a reciprocating piston in a cylinder in the engine block, a crankshaft, at least one bearing supporting said crankshaft, a cam, a cam gear, a valve train, a pair of rocker arms, an oil reservoir and a cylinder head defining an intake and exhaust valve chamber and overhead intake and exhaust valves, the method comprising the steps of:

creating within said oil reservoir a lubrication oil mist;
providing said oil mist to said piston, said crankshaft, said bearing, said cam, said cam gear, said valve train, said pair of rocker arms, and said overhead intake and exhaust valves by conducting the oil mist through a passage from said reservoir to the valve chamber; and

conducting the oil mist in a return flow passage through said engine block from said valve chamber to said reservoir.

2. A hand-held, portable, power tool adapted to be carried by an operator while in use, comprising:

a frame, including a handle engageable by an operator;
an implement cooperating with the frame and having a rotary-driven input member;

a lightweight, four-stroke cycle, internal combustion, spark-ignition engine attached to said frame wherein said engine comprising:

a lightweight aluminum engine block defining a cylinder head assembly, a cam housing, a crank chamber and a cylindrical bore;
an intake valve and exhaust valve in said cylinder head assembly;
a piston slidably disposed in said cylindrical bore;

a crankshaft supported by at least one bearing in said crank chamber, said crankshaft being drivably connected to said piston, and having an output end cooperating with an input end of said implement;

a cam rotatably mounted in said cam chamber and driven by said crankshaft at less than the full speed of said crankshaft; and

a valve cover on said cylinder head defining a valve chamber.

3. The hand-held, portable, power tool of claim 2 wherein said tool is a line trimmer.

4. The hand-held, portable, power tool of claim 2 wherein said tool is a chain saw.

5. The hand-held, portable, power tool of claim 2 wherein said tool is a blower/vacuum.

6. The hand-held, portable, power tool of claim 2 wherein said engine further comprising:

an oil reservoir for storing engine lubrication oil; and

an engine lubrication system whereby said oil is circulated through said engine to lubricate said piston, said crankshaft, said bearing, said intake and exhaust valves, and said cam.

7. The hand-held, portable, power tool of claim 6 wherein said engine lubrication system comprising:

an oil flow passage such that said oil reservoir, said cylindrical bore, said crankshaft chamber, said cam chamber and said valve chamber are in fluid communication; and

an oil return passage from said valve chamber to said oil reservoir.